

GENERAL DESCRIPTION OF THE CURRENT FIRE PROBLEM Level of Service



The success of firefighting is the result of many complex factors, including the mobilization of critical resources in a timely manner. The California Department of Forestry and Fire Protection does not fight fire alone; rather it relies on the assistance of federal and local government firefighting resources through a series of interagency agreements. Interagency agreements include the California Fire Assistance Agreement delineating the use of local

government resources by state and federal firefighting agencies (CDF, USFS, BLM & NPS), and local mutual and automatic aid agreements whereby local entities agree to share resources during emergencies. There are many such agreements between federal, state and local jurisdictions within Butte and Plumas counties.

LEVEL OF SERVICE RATING

The legislature has charged the Board of Forestry and CDF with delivering a fire protection system that provides an equal level of protection for lands of similar type (PRC 4130). In order to do this, CDF utilizes an assessment process, which evaluates the level of service currently afforded a particular wildland area with the level identified for the same area. The rating is expressed as the percentage of fires that are successfully extinguished during initial attack. Success is defined as those fires that are controlled during the initial attack phase by limited resources, before unacceptable damage and cost are incurred.

California has a complex fire environment and CDF data on assets at risk relative to damage from wildfire is incomplete. These factors combine to make it very difficult to develop a true performance-based fire protection planning system. CDF has resorted to prescription-based fire protection planning (travel times of firefighting resources to incidents, fire detection systems and associated reporting times, the same acreage goal statewide, etc.) as a way to overcome the complexity of the issues. Unfortunately, prescription-based planning tends to oversimplify some issues. For instance, prescription standards make it difficult to integrate the interrelationships of various fire protection programs, such as the value of fuel-reduction programs in reducing the level of fire protection effort required.

Despite the shortcomings of a prescription-based fire protection planning system, the Level of Service rating (LOS) is a relative system, which attempts to measure the impact of

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fire on the various assets at risk. It is an approximation method which has been proposed to allow the unit to proceed with a damage-plus-cost analysis assessment of fire protection performance. The Level of Service rating also provides a way to integrate the contribution of various program components (fire prevention, fire protection planning, including fuels management, and fire suppression) toward the goal of keeping damage and cost within acceptable limits. It is important to reiterate that this system is a relative system and that the ratings are only approximations.

In this system, a fire may be considered a failure based upon the level of resource commitment and fire size. Unfortunately, this type of analysis oversimplifies the myriad of factors that truly determine initial attack success. For instance, based upon critical firefighting factors such as resource draw-down and extreme fire weather conditions firefighting efforts may have been quite successful, however extreme factors have overpowered firefighting capabilities resulting in a failure.

The Level of Service (LOS) rating is a ratio of successful initial attack fire suppression efforts to the total number of fire starts. Level of Service ranking (LOS) utilizes GIS (Geographic Information System) to graphically display the success and failures of the fire protection system by overlaying 10 year wildfire history onto a map and deriving the average annual number of fires by size, severity of burning conditions and assets lost. The LOS rating can be readily used to describe the degree of success of fire protection services to "civilian stakeholders."

$$\text{Success Rate (in \%)} = \frac{\text{Annual number of fires extinguished by initial attack}}{\text{Total number of fires}} \times 100$$

The result is an initial attack success rate measured as a percentage of fires by vegetation type and area. Success is defined as those fires that are controlled before unacceptable damage and cost are incurred and where initial attack resources are sufficient to control wildfires.

The Fire Plan Ignition Workload Assessment map is designed to show the effectiveness of the suppression organization in meeting the initial attack fire workload. The attempt to control fires before they become large and costly is evaluated in this assessment. The underlying assumption is that fires, successfully contained in the initial attack stages, are not the primary problem. Problem fires are the few that exceed initial attack suppression capabilities, generally due to extreme fire weather conditions, are costly to control and cause substantial damage.

Fires are grouped into "success" and "failure" categories based on various factors. The assessment groups fires by general vegetation or fuel types (planning belts). Within the planning belt, fires are further classified based on final fire size and weather conditions at the time of ignition. Each fire is in turn classified and labeled as either a successful initial attack or a failure.

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The statistical data related to the initial attack workload assessment is displayed in the following maps. Initial attack points of origin are plotted and color-coded based on success/failure scores. Some of the successes and failures are not matched with weather readings due to incomplete data sets; however they are still displayed on this analysis. Further validation will be conducted to match weather with the ignitions in the future. The result of the initial attack workload assessment is summarized as a percentage score for initial attack success and displayed on the Quad 81st (450 acre blocks) grid. Combining fire business workload patterns with aggregated assets at risk can be useful in defining target areas for focusing Pre-fire Management project efforts.

Initial attack Success and Failures

Analyses time period includes May 1990 through December of 1999. The following planning belt vegetation types were analyzed.

<u>Planning Belt</u>	<u>Success Rate</u>	<u>Successful I.A.</u>	<u>I.A. Failure</u>
Grass	94%	1048	72
Brush	95%	834	41
Interior (Timber)	94%	461	27
Woodland	97%	300	8

Initial attack Success and Failures for 2004

<u>Planning Belt</u>	<u>Success Rate</u>	<u>Successful I.A.</u>	<u>I.A. Failure</u>
Grass	97%	71	2
Brush	96%	66	3
Interior (Timber)	89%	17	2
Woodland	100%	19	0
Agricultural or Urban	94%	111	7

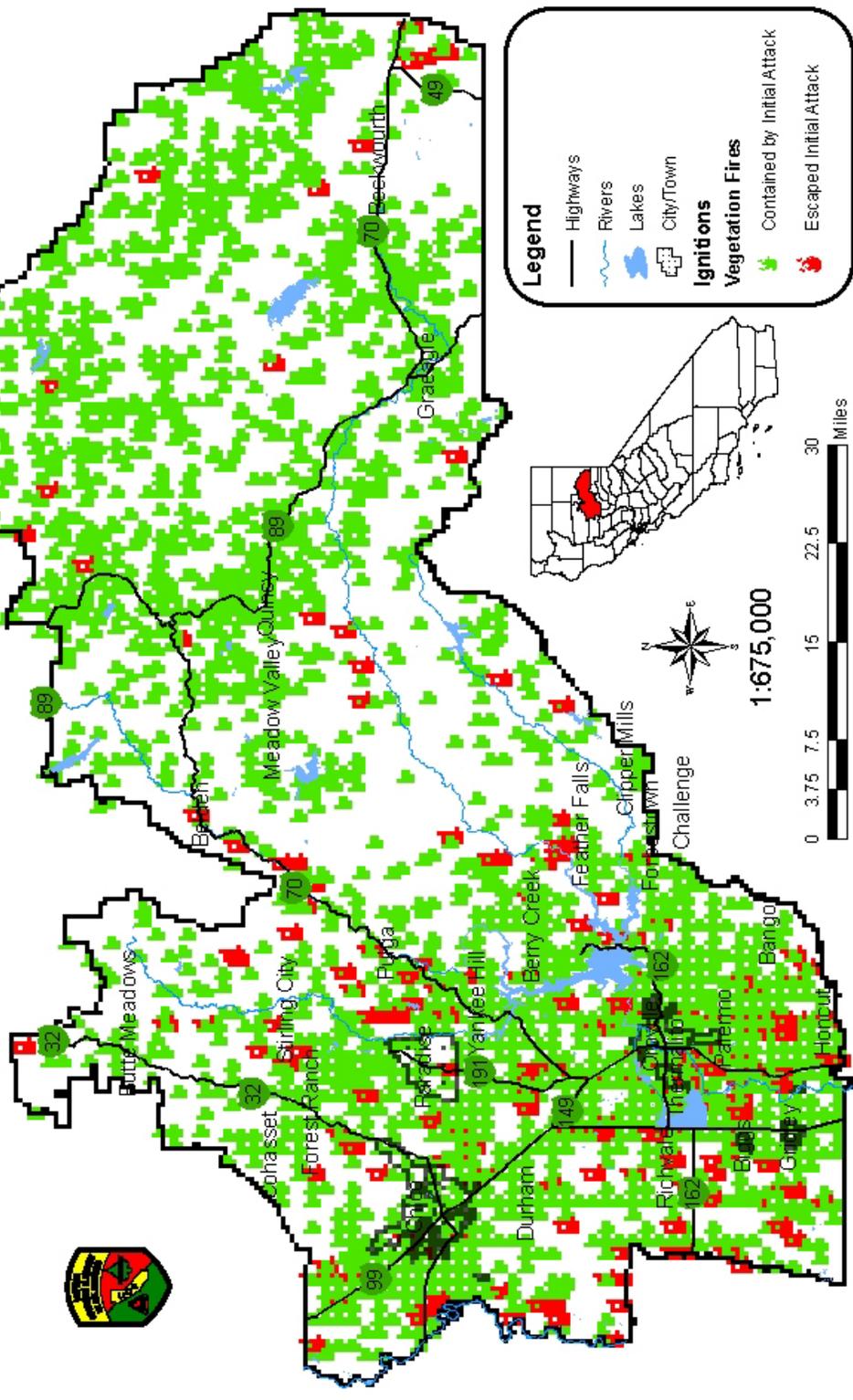
Failures were defined as the following:

Woodland Fires = 15 acres and above
Grass Fires = 12 acres and above
Brush Fires = 6 acres and above
Interior (Timber) Fires = 3 acres and above

- ❖ Note that ignition data for Plumas County is not available at this time. Maps only display ignition data for 2004 fires in Butte County.

Initial Attack Success & Failure
Butte County - CDF Direct Protection Area (DPA)
Plumas County - USFS Direct Protection Area (DPA)
 By 450 Acre Parcel (Quad 81)

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 June 24, 2005
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Source: CDF & USFS Data

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Fire Workload Analysis
Butte County - CDF Direct Protection Area (DPA)
Plumas County - USFS Direct Protection Area (DPA)
 By 450 Acre Parcel (Quad 81)

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